

**Kindergarten  
Science Curriculum**

**Unit 1 Becoming Avid Scientists Through the Study of Sunlight**

**Course Description:** This unit will focus on weather and climate, particularly on sunlight and how it impacts different surfaces on Earth - sand, soil, rock, and water. Ultimately, students will use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

**Big Ideas:**

- Sunlight warms the Earth's surface.
- People use tools and materials to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.

<b>Essential Questions</b> <ul style="list-style-type: none"><li>● How can we examine the world around us and learn as much as we can?</li><li>● How can we observe, label, and list like a scientist?</li><li>● How does sunlight affect our lives?</li><li>● How does sunlight affect our planet?</li></ul>	<b>Enduring Understandings</b> <p>Scientists discover the world around them, learn as much as they can, and share their learnings with others in order to solve problems.</p> <ul style="list-style-type: none"><li>● Scientists observe the world around them, label, and list their findings.</li><li>● In order to solve problems, scientists share their findings with others.</li></ul> <p>Sunlight warms the earth's surface.</p> <ul style="list-style-type: none"><li>● Sunlight affects various surfaces (rock, sand, water, soil).</li><li>● Scientists use different ways to study the world.</li></ul>
<b>Areas of Focus: Proficiencies</b> <p>Students will:</p> <p>K-PS3-1: Make observations to determine the effect of sunlight on earth's surface.</p> <p>K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming of sunlight on an area.</p>	<b>Examples, Outcomes, Assessments</b> <p>Instructional Focus:</p> <ul style="list-style-type: none"><li>- Sunlight warms earth's surface.</li><li>- Temperatures can be compared (warmer, cooler).</li><li>- Different areas can vary in temperature</li><li>- Darker surfaces absorb more light and heat than lighter/brighter surfaces.</li><li>- Structures can provide shade</li></ul>

	<ul style="list-style-type: none"> <li>- Shade will make a surface cooler</li> <li>- Structures can be made to solve problems</li> <li>- Structures can impact the warmth/coolness of a surface.</li> <li>- Scientists observe models to gather ideas to make their structure better.</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>- Create a playground map</li> <li>- Design a structure to provide shade</li> <li>- Make observations about the effect color has on temperature when exposed to direct sunlight</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>- go outside and experiment standing in the shade and in the sun. Students will notice; do they feel warm or cool in the shade? How do they feel when in the sun?</li> <li>- Observe which paper (black or white) gets hotter in sunlight.</li> <li>- Observe the effects of sunlight on rock, sand, water, and soil</li> <li>- Notice and observe the differences between warm and cold temperatures.</li> </ul> <p>Interdisciplinary Connections</p> <p>Technology Integration</p> <p>Global Perspectives</p> <p>NOTE re: Examples, Outcomes and Assessments</p> <p><i>The following skills and themes should be reflected in the design of units and lessons for this course or content area.</i></p> <p>21st Century Skills:</p>
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	<p>Creativity and Innovation</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>Information Literacy</p> <p>Media Literacy</p> <p>Life and Career Skills</p> <p>21st Century Themes (as applies to content area):</p> <p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Civic Literacy</p> <p>Health Literacy</p>
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**Kindergarten  
Science Curriculum  
Unit 2 - Weather and Climate: Four Seasons Throughout the Year**

**Course Description:** This unit will focus on weather and climate, particularly on noticing weather patterns, and making predictions about future weather events. Also, daily and seasonal weather conditions affect what we do, what we wear, and how we feel. This unit also explores the conditions that impact weather: cloud formations, the different states of precipitation, and temperature.

**Big Ideas:**

Weather is constantly changing.

We can use weather patterns to predict the weather.

Weather changes throughout the seasons and this impacts our lives.

<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>• What is weather? (cold/hot, humid/dry, windy, cloudy, precipitation)</li> <li>• What tools do we use to measure weather? How do we use the tools?</li> <li>• How does weather influence our clothing choices? How does weather influence our activity choices?</li> <li>• How do weather patterns impact our lives?</li> </ul>	<p><b>Enduring Understandings</b></p> <p>Students will understand that -</p> <ul style="list-style-type: none"> <li>• Weather is the combination of sunlight, wind, snow, or rain, and temperature in a particular region at a particular time.</li> <li>• Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermometers.</li> <li>• Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle). Repeated observations can show patterns that can be used to predict general weather conditions. For example, temperatures are generally cooler at night than during the day and colder in winter than in spring, summer or fall.</li> <li>• Weather can be predicted by patterns.</li> <li>• Weather affects decisions we make about clothing and activities.</li> <li>• Some kinds of severe weather are more likely than others in a given region.</li> <li>• Meteorologists forecast severe weather so that the communities can prepare for and respond to these events.</li> </ul>
<p><b>Areas of Focus: Proficiencies</b></p>	<p><b>Examples, Outcomes, Assessments</b></p>

<p>NGSS:</p> <p>K-ESS2-1: Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)  <a href="http://www.nextgenscience.org/kes2-earth-systems">http://www.nextgenscience.org/kes2-earth-systems</a></p> <p>K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather (emphasis on local forms of severe weather).</p>	<p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>- Use the data to look for weather changes and patterns.</li> <li>- Observe and describe weather.</li> <li>- Learners will discuss how they decide what to wear to school each day.</li> <li>- Observe, discuss, and use thermometers as tools that measure temperature.</li> <li>- Observe and record cloud data</li> <li>- Use the data to look for weather changes and patterns.</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>- Using a weather picture, draw and label using everything you know about weather</li> <li>- Observations of children's responses and engagement of activity.</li> <li>- Students recorded observations and models.</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>- Create and use weather instruments.</li> <li>- Predict what the following day's weather will be</li> </ul> <p>Interdisciplinary Connections</p> <p>RI.K.1 With prompting and support, ask and answer questions about key details in a text.</p> <p>W.K.7 Participate in shared research and writing projects</p> <p>SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood</p> <p>Technology Integration</p> <p>Global Perspectives</p> <p>NOTE re: Examples, Outcomes and Assessments  <i>The following skills and themes should be reflected in the design of units and lessons for this course or content area.</i></p> <p>21st Century Skills:</p>
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	<p>Creativity and Innovation</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>Information Literacy</p> <p>Media Literacy</p> <p>Life and Career Skills</p> <p>21st Century Themes (as applies to content area):</p> <p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Civic Literacy</p> <p>Health Literacy</p>
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**Kindergarten  
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Unit 3 - Pushes and Pulls**

**Course Description:** This unit will focus on applying an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution. The crosscutting concept of cause and effect is called out as the organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations and analyzing and interpreting data. Students are also expected to use these practices to demonstrate understanding of the core ideas.

**Big Ideas:**

Pushes and pulls are forces.  
Objects move by push or pull.

<b>Essential Questions</b>	<b>Enduring Understandings</b> Students will understand that -
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<ul style="list-style-type: none"> <li>• How do different strengths or directions of pushes and pulls affect the motion of an object?</li> <li>• How can a design solution work to determine the speed or direction of an object with a push or a pull?</li> </ul> <p>Kid Friendly Essential Questions</p> <ul style="list-style-type: none"> <li>• How does pushing and pulling affect how an object moves?</li> <li>• How can we create an object that can push or pull?</li> </ul>	<ul style="list-style-type: none"> <li>• Pushes and pulls can have different strengths and directions.</li> <li>• Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.</li> <li>• When objects touch or collide, they push on one another and can change motion.</li> <li>• A bigger push or pull makes things speed up or slow down more quickly.</li> <li>• A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems can have many acceptable solutions.</li> </ul>
<p><b>Areas of Focus: Proficiencies NGSS:</b></p> <p>K-PS2-1: Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p> <p>K-PS2-2: Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p><b>Examples, Outcomes, Assessments</b></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>- Explore how movement of our bodies can be a push or a pull.</li> <li>- Investigate pushes/pulls on playground.</li> <li>- Investigate how to make bigger pushes/pulls.</li> <li>- Investigate directions of pushes/pulls.</li> </ul> <p>Sample Assessments:</p> <ul style="list-style-type: none"> <li>- Draw and label observations during investigations.</li> <li>- Observations of children's responses and engagement of activity.</li> <li>- Students recorded observations and models.</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>- Create push/pull investigations.</li> <li>- Predict what will happen</li> </ul> <p>Interdisciplinary Connections</p> <p>RI.K.1 With prompting and support, ask and answer questions about key details in a text.</p> <p>W.K.7 Participate in shared research and writing projects</p> <p>SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not</p>

	<p>understood</p> <p>Technology Integration</p> <p>Global Perspectives</p> <p>NOTE re: Examples, Outcomes and Assessments <i>The following skills and themes should be reflected in the design of units and lessons for this course or content area.</i></p> <p>21st Century Skills:</p> <ul style="list-style-type: none"><li>Creativity and Innovation</li><li>Critical Thinking and Problem Solving</li><li>Communication and Collaboration</li><li>Information Literacy</li><li>Media Literacy</li><li>Life and Career Skills</li></ul> <p>21st Century Themes (as applies to content area):</p> <ul style="list-style-type: none"><li>Financial, Economic, Business, and Entrepreneurial Literacy</li><li>Civic Literacy</li><li>Health Literacy</li></ul>
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**Kindergarten  
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Unit 4 - Plant and Animal Needs**

**Course Description:** This unit will focus on developing an understanding of what plants and animals need to survive and the relationship between their needs and where they live. Students compare and contrast what plants and animals need to survive and the relationship between the needs of living things and where they live. The crosscutting concepts of patterns and systems and system models are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in developing and using models, analyzing and interpreting data, and eng

**Big Ideas:**

Alliving things have basic needs.

Living things have similarities and differences.

<p><b>Essential Questions</b></p> <ul style="list-style-type: none"> <li>• What do plants need to live, grow, and survive?</li> <li>• What do animals need to live, grow, and survive?</li> <li>• How are plant and animal needs alike and different?</li> <li>• How can plants and animals change their habitats?</li> </ul>	<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>• All animals need food in order to live and grow.</li> <li>• Animals obtain their food from plants or other animals.</li> <li>• Differentiate between the needs of animals and plants.</li> <li>• Recognize the basic needs of organisms.</li> <li>• Different kinds of food are needed by different types of animals.</li> <li>• Plants need light and water to live and grow.</li> <li>• All living things need water.</li> </ul>
<p><b>Areas of Focus: Proficiencies NGSS:</b></p> <p>Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.] (K-LS1-1)</p> <p>Use a model to represent the relationship between the needs of different plants and animals</p>	<p><b>Examples, Outcomes, Assessments</b></p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> <li>- Living and nonliving</li> <li>- Plant seed and make observations about their growth</li> <li>- Raise eggs and make predictions</li> <li>- Plant and animal life cycles</li> <li>- Comparing plant/animal needs</li> </ul> <p>Instructional Strategies:</p> <ul style="list-style-type: none"> <li>- Create investigations.</li> <li>- Predict what will happen</li> <li>- Research living things</li> </ul> <p>Interdisciplinary Connections</p> <p>RI.K.1 With prompting and support, ask and answer questions about key details in a text.</p>

<p>(including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.] (K-ESS3-1)</p> <p>Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.] (K-ESS2-2)</p>	<p>W.K.7 Participate in shared research and writing projects</p> <p>SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood</p> <p>Technology Integration</p> <p>Global Perspectives</p> <p>NOTE re: Examples, Outcomes and Assessments  <i>The following skills and themes should be reflected in the design of units and lessons for this course or content area.</i></p> <p>21st Century Skills:</p> <ul style="list-style-type: none"> <li>Creativity and Innovation</li> <li>Critical Thinking and Problem Solving</li> <li>Communication and Collaboration</li> <li>Information Literacy</li> <li>Media Literacy</li> <li>Life and Career Skills</li> </ul> <p>21st Century Themes (as applies to content area):</p> <ul style="list-style-type: none"> <li>Financial, Economic, Business, and Entrepreneurial Literacy</li> <li>Civic Literacy</li> <li>Health Literacy</li> </ul>
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